Preparation and Investigation of Acetyl Salicylic Acid-Caffeine Complex for Rectal Administration

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Abstract:

An acetyl salicylic acid-caffeine complex was prepared and evaluated for the potential use in rectal administration. The results revealed the formation of a complex between acetyl salicylic acid and caffeine in a 1:1 molar ratio by a charge transfer mechanism. The effects of acetyl salicylic acid and complex on the rectal tissues showed destruction in the mucosal epithelium in case of acetyl salicylic acid; however, no change in the rectal tissues was noticed upon the administration of the complex. The effect of suppository bases on the release of the complex was studied using Witepsol H15 as fatty base and polyethylene glycols (PEG) 1000 and 4000 as a water soluble suppository base. The release profiles of acetyl salicylic acid and the complex were faster from PEG than from that of Witepsol H15. The percent release for the complex and acetyl salicylic acid from PEG base were 45.8, and 34.9%, respectively. However, it was 8.7 and 7.8%, respectively, from Witepsol H15 fatty base. The release kinetic was found to follow the non-Fickian diffusion model for complex from the suppository bases. It was concluded that acetyl salicylic acid caffeine complex can be used safely for rectal administration.

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